ASSIGNMENT 3

Textbook Assignment: "Alfa Company Maintenance Shop Supervisor," and "Engine Troubleshooting and Overhaul," pages 2-19 through 3–28.

3-1. Making sure an ERO, a copy of the equipment evaluation inspection guide, and a copy of the attachment evaluation inspection guide are prepared for each piece of equipment being BEEPed is the responsibility of which of the following activities?

1. Relieving unit
2. Unit being relieved
3. Both 1 and 2 above
4. COMCBPAC/COMCBLANT

3-2. During a BEEP, at what time, if any, would a piece of CESE in storage be depreserved for testing?

1. When a major discrepancy is suspected
2. When a minor discrepancy is suspected
3. On the last 2 days of the BEEP only
4. Never, stored CESE is not depreserved during a BEEP

3-3. What code is qiven to a piece of deadlined equipment to indicate that its repairs would cost more than 40 percent of its acquisition cost?

1. A6
2. F9
3. S4
4. X1

3-4. In which COMCBPAC/COMCBLANT Instruction would you find guidelines to accomplish the repair parts portion of the BEEP?

1. 1020.1 series
2. 3120.1 series
3. 4400.3 series
4. 5600.1 series

3-5. What company or staff group determines and adjusts load requirements to fit the type of unit doing the transport?

1. The battalion embarkation staff
2. Alfa company
3. The aircraft loadmaster
4. COMCBPAC/COMCBLANT embarkation staff

3-6. Air detachment equipment should receive a low priority durinq a complete embarkation.

1. True
2. False

3-7. When equipment is embarked, you should NOT perform which of the following actions as part of the preparation?

1. Minor repairs
2. Collateral equipment installation
3. Spare tire installation
4. Complete repaint

3-8. Aircraft loading and tie-down is normally under the direction of what person?

1. The embarkation officer
2. The convoy commander
3. The aircraft loadmaster

3-9. Safety instructions for hazardous materials storage may be found in what manual or publication?

1. NAVFAC P–405
2. U.S. ARMY EM-385-l-1
3. NAVFAC P-908

3-10. For the purpose of avoiding congestion, track laying equipment and automotive equipment are usually fueled in the same area.

1. True
2. False

3-11. Compressed gas cylinders should NOT be stored in what way?

1. Segregated
2. Away from the work space
3. Away from any oil and qrease
4. Grouped together

3-12. In a battery shop, you must store electrolyte in what manner?

1. With the container on its side
2. Standing up on the deck
3. Standing up on a stable platform
4. Standing up in an airtight room

3-13. Hosing a fuel spill with water causes what problem?

1. Lowers the volatility
2. Dilutes the fuel
3. Spreads the fuel over a large area

3-14. When field repairs are completed, who is responsible for collecting the waste oil from those operations?

1. The shop supervisor
2. The maintenance supervisor
3. Bravo company personnel for dust control
4. The field repair personnel

3-15. Unless otherwise directed, what action should you take with unneeded materials, excess CESE, and CESE components?

1. Turn them in to DRMO throuqh proper instructions
2. Hold excess items for future use
3. Turn them over to local PWC

3-16. If you are attached to an NMCB, at what time may CESE be placed in DRMO?

1. When disposal instructions have been received
2. When the replacement CESE is at your unit
3. Upon notification that the replacement CESE has been shipped to your unit

3-17. What action should you take with the attachments of a unit of CESE when it is placed in DRMO?

1. Turn in the attachments assigned to that unit to DRMO with parent CESE
2. Turn attachments over to a local public works center
3. Retain the attachments on your site for use

3-18. If doubt arises about turn-in instructions for hazardous materials, you should contact what department or person?

1. Your unit’s supply officer
2. The local disposal office
3. The Alfa company commander

3-19. What is the horsepower equivalent of 66,000 foot-pounds of work per minute?

1. 1
2. 2
3. 3
4. 4

3-20. A 6-horsepower engine can produce what maximum amount of work per minute?

1. 50,000 foot-pounds
2. 66,000 foot-pounds
3. 100,000 foot-pounds
4. 198,000 foot-pounds

3-21. What kind of horsepower would an engine deliver if it were possible to eliminate all frictional losses?

1. Friction
2. Indicated
3. Drawbar
4. Brake

IN ANSWERING QUESTIONS 3-22 THROUGH 3-25, REFER TO FIGURES 3-2, 3-3, AND 3-4 OF YOUR TEXTBOOK.

3-22. An increase of engine speed above rated speed affects the torque produced in what way, if any?

1. The torque drops
2. The torque rises
3. The torque matches speed
4. None

3–23. Engine torque increases steadily in which of the following speed ranges?

1. 1,200 to 1,600 rpm
2. 1,600 to 2,000 rpm
3. 2,000 to 2,400 rpm
4. 2,400 to 2,800 rpm

3-24. In which of the following speed ranges does engine torque fall while horsepower rises?

1. 1,000 to 1,700 rpm
2. 1,800 to 2,600 rpm
3. 2,700 to 2,900 rpm
4. 3,000 to 3,200 rpm

3-25. At what speed is engine horsepower at maximum?

1. About 200 rpm less than rated speed
2. At rated speed
3. About 200 rpm greater than rated speed
4. About 500 rpm greater than rated speed

3-26. In the cycle of gasoline operation, which of the following events must be properly timed to ensure correct engine timing?

1. Opening of the intake and exhaust valves
2. Closing of the intake and exhaust valves
3. Spark ignition of the fuel
4. Each of the above

IN ANSWERING QUESTION 3-27, REFER TO FIGURE 5-6 IN YOUR TEXTBOOK.

3-27. To determine all timing events in a four-stroke cycle diesel engine, what number of clockwise revolutions must you trace on the timing diagram?

1. One
2. Two
3. Three
4. Four

IN ANSWERING QUESTIONS 3-28 AND 3-29, REFER TO FIGURE 3-6 IN YOUR TEXTBOOK.

3-28. The intake valve of a four-stroke cycle diesel engine opens during which of the following events?

1. A few degrees before TDC as the piston nears the end of its exhaust stroke
2. A few degrees after TDC as the piston nears the end of its exhaust stroke
3. Just as the piston reaches TDC on its exhaust stroke
4. At 40° before TDC as the piston nears the end of its compression stroke

3-29. What stroke of a four-stroke cycle diesel engine begins slightly before TDC, continues through BDC, and ends during the next upstroke of the piston?

1. Power stroke
2. Exhaust stroke
3. Intake stroke
4. Compression stroke

IN ANSWERING QUESTIONS 3–19 AND 3-20, REFER TO FIGURE 3-7 IN YOUR TEXTBOOK.

3-30. What is the relationship between fuel injection timing and piston position?

1. When the piston is at TDC, fuel is about to be injected
2. When the piston is at TDC, fuel has already been injected
3. When the piston is at TDC, fuel is being injected
4. When the piston is at BDC, fuel is being injected

3-31. A piston in a typical General Motors two-stroke cycle diesel engine delivers power to the crankshaft for a total of how many degrees past TDC?

1. 17.5°
2. 44.5°
3. 92.5°
4. 132.0°

3-32. Which of the following malfunctions can cause an engine to lose power?

1. Incorrect ignition timing
2. Defective valve spark advance
3. Worn distributor cam
4. All of the above

3-33. When a diesel engine has a faulty fuel injector, who should perform repair?

1. Any mechanic who volunteers
2. An experienced mechanic who has been trained to repair injectors
3. A qualified automotive engineer

3-34. The working parts of a diesel or gasoline engine and the capacity of the engine to produce its rated power are directly related to which of the following factors?

1. Pressure and temperature of intake air
2. Ignition, compression, and carburetion
3. Quality of fuel and heat of compression
4. All of the above

3-35. Which of the following factors does NOT relate directly to the working parts of a diesel or gasoline engine but can contribute to loss of engine power?

1. Number of accessories or attachments operated by the engine
2. Pressure of intake air
3. Temperature of intake air
4. Compression ratio

3-36. Locating the source of trouble in a gasoline engine can be accomplished by which of the following means?

1. Examining the engine exhaust gases
2. Operating the engine under load
3. Shorting out spark plugs
4. Each of the above

3-37. Excessive oil consumption of an engine is likely to result in a major engine overhaul due to which of the following problems?

1. A cracked vacuum pump diaphragm
2. Worn valve guides or stems
3. Worn piston rings or cylinder walls
4. Each of the above

3-38. A vehicle operator reports on his trouble card that his vehicle oil pressure gauge shows a continuous low oil pressure reading. The low reading could be caused by which of the following engine problems?

1. Worn oil pump
2. Worn engine bearings
3. Weak relief-valve spring
4. Each of the above

IN ANSWERING QUESTIONS 3-39 THROUGH 3-41, SELECT FROM COLUMN B THE METHOD FOR LOCATING THE ENGINE NOISE GIVEN IN COLUMN A. RESPONSES IN COLUMN B MAY BE USED ONCE, MORE THAN ONCE, OR NOT AT ALL.

	A. ENGINE NOISES	B. METHODS
3-39.	Valve and tappet clicking	1. Short out spark plugs one at *a* time while engine is floating
3-40.	Piston pin knocking	2. Short out spark plugs one at a time while engine is idling with advanced spark
3-41.	Connecting rod pounding	3. Insert feeler gauge while engine is idling
		4. Squirt 1/2 ounce of oil into each cylinder, reinstall spark plugs and run engine

---

3-42. Suppose you hear a heavy, dull, metallic knock regularly while an engine is operating under load or accelerating. What type of engine noise is indicated?

1. Piston pin knock
2. Crankshaft knock
3. Main bearinq knock
4. Piston slap

3-43. To check the uniformity of pressures within the combustion chambers of an engine, a mechanic should use which of the following instruments?

1. Vacuum gauge
2. Compression gauge
3. Cylinder leakage tester
4. Exhaust gas analyzer

3-44. For a gasoline engine in good condition, idling at 550 rpm at a 4,000-foot altitude, the vacuum gauge reading should be within what range?

1. 21 to 26 inches
2. 17 to 22 inches
3. 15 to 20 inches
4. 13 to 18 inches

3-45. When a vacuum gauge indicates an incorrect adjustment of the idle speed screw on a carburetor, the gauge pointer will do which of the following things?

1. Remain steady on 10 inches
2. Remain steady on 18 inches
3. Vary slowly between 13 and 15 inches
4. Vary rapidly between 13 and 19 inches

3-46. A device for introducing compressed air into the cylinder of an engine can be made by removing the insulator from an old spark plug and welding a pneumatic valve stem to the threaded end of the plug.

1. True
2. False

3-47. When using compressed air to test an engine cylinder for leakage, you notice air bubbles in the radiator coolant. The bubbles indicate that air is probably being released by what means?

1. A defective head gasket
2. A leaking intake valve
3. A defective exhaust valve
4. A piston ring

3-48. A commercial compression tester will indicate compression pressure and what else?

1. The percentage of air loss in a cylinder
2. The air temperature in a cylinder
3. The amount of carbon built up on a piston

IN ANSWERING QUESTIONS 3–49 THROUGH 3-52, SELECT FROM COLUMN B THE POSSIBLE CAUSE OF THE TROUBLE IN COLUMN A. RESPONSES IN COLUMN B MAY BE USED ONCE, MORE THAN ONCE, OR NOT AT ALL.

A. TROUBLES	B. POSSIBLE CAUSES
3-49. Broken valve	1. Insufficient valve tappet clearance
3-50. Burnt valve	2. Rich fuel-air mixture
3-51. Sticking valve	3. Cocked valve spring or retainer
3-52. Valve deposits	4. Insufficient oil

3-53. Which of the following conditions may be directly caused by a valve that is adjusted too tightly?

1. Cocked valve spring
2. Damaged piston
3. Loose adjustment locks
4. Loss of compression

3-54. When you adjust the valves, the piston should be in what position and on what stroke?

1. TDC of the compression stroke
2. TDC of the intake stroke
3. BDC of the intake stroke
4. BDC of the compression stroke

3-55. Why do valve lifters of the type shown in figure 3-14 of your textbook provide ideal valve timing?

1. They operate at zero clearance
2. They compensate for engine temperature changes
3. They adapt automatically for minor wear at various points
4. All of the above

3-56. A mechanic should measure the eccentricity of a valve before deciding whether to reuse or replace it.

1. True
2. False

3-57. Valves and their seats are refaced at exactly the same angle to help the valves cut through carbon deposits for improved sealing.

1. True
2. False

3-58. During the process of grinding valve seats, a valve seat grinder is kept concentric with the valve guide by what means?

1. Upper and lower grinding stones
2. Centered grinding stones in the chuck
3. A self-centering pilot in the valve guide
4. Centrifugal force

3-59. One method of checking the valve seating is to coat the valve face lightly with prussian blue and twist the valve one-quarter turn in its seat. How can you tell whether the valve seat is concentric with the valve guide?

1. Prussian blue will transfer evenly to the valve seat
2. There will be no trace of prussian blue on either the valve or its seat
3. The shade of prussian blue will grow brighter
4. Prussian blue will collect in a pile on the valve seat

3-60. When inserting a new valve seat, you should use which of the following techniques?

1. Heat the engine block or cylinder head to expand the valve opening, then drop the insert in place
2. Shrink the insert by chilling, then drive it in place
3. Hold the insert with pliers, then tap it in place with a hammer
4. Squeeze the insert with a special insert tool, then drop it in place

3-61. When the bore of a solid valve lifter becomes worn, you should take what corrective action?

1. Reface the lifter, ream out the bore, then fit with an oversized lifter
2. Ream out the bore, then fit with an undersized lifter
3. Ream out the bore, then fit with an oversized lifter
4. Replace the complete valve lifter assembly

3-62. To indicate the end of a leak down rate test on an hydraulic valve lifter, what action takes place as the valve seats?

1. The feeler gauge loosens
2. The feeler gauge binds
3. The oil leaks fast
4. The oil leaks slowly

3-63. In the installation of new camshaft bearinqs, it is important that you take which of the following steps?

1. Line-ream them before they are installed
2. Line up the oil holes with those in the block
3. Stake them, whether or not the old bearinqs were staked

3-64. How can you tell whether the timing gear keyed on the camshaft and the one keyed on the crankshaft are installed properly?

1. The number of gear teeth between the marks is divisible by three
2. All the marks on the gear teeth fall on the same straight line
3. There is an even number of teeth between gear marks
4. The gears mesh so that the two marked teeth of one gear straddle the one marked tooth of the other gear

3-65. If bearings appear to have worn uniformly, which of the following actions should you take?

1. Regrind the crankshaft .010 and replace the bearings
2. Replace the crankshaft as is in the unit
3. Perform the crankshaft checks and replace the bearings

3-66. Connecting rod or main bearing journals must be reground if they are tapered or out of round in excess of what measurement?

1. .001
2. .002
3. .003
4. .004

3-67. When you are using plastigage, what could uneven flattening indicate?

1. A crankshaft worn tapered
2. Bearings worn tapered
3. Both 1 and 2 above
4. A torque problem when the engine was assembled

3-68. A sharp irregular knocking sound is coming from the inside of the engine you are working on. This knocking sound could be caused by which of the following problems?

1. Worn main bearings
2. Worn connecting rod bearings
3. Either 1 or 2 above
4. Worn thrust surfaces

3-69. To measure engine cylinders for taper, you should use which of the following tools?

1. An inside micrometer
2. A specific dial indicator
3. Both 1 and 2 above
4. A depth micrometer

3-70. The glaze of a cylinder wall is broken by honing for which of the following reasons?

1. To slow initial ring wear
2. To allow the rings to seat quickly
3. To prevent scuffing of the pistons
4. Each of the above

3-71. For what reason, if any, should a cylinder ridge be removed on an engine being disassembled?

1. To prevent damaging the cylinders
2. To prevent damage to the cylinders after the engine is reassembled
3. To prevent damage being done to the pistons as they are removed

3-72. Scraping the sides of a piston during cleaning may leave scratches that can cause excessive cylinder wall wear.

1. True
2. False

3-73. To measure the fit of a piston to the cylinder, which of the following tools would you need?

1. A feeler gauge
2. A spring qauge
3. Both 1 and 2 above
4. A dial indicator set

3-74. What is the proper procedure for fitting a full-floating type piston pin?

1. Drive the piston pin in place using a soft-faced hammer
2. Press the piston pin in place using light thumb pressure
3. Press the piston pin in place using light hydraulic pressure

3-75. The new piston ring is measured for ring-end gap at what point in the cylinder?

1. At the top of the cylinder
2. Midway in the cylinder
3. At the lowest point in the cylinder
4. At the lowest point of ring travel